

CLAIMS

1. A multicast radio system comprising a master station and a plurality of slave stations, the master station comprising means to transmit
5 data to the plurality of slave stations simultaneously, each slave station comprising means to receive the data and means for determining whether it requires retransmission of the data, wherein at least one slave station is in a first state and the other slave station or slave stations is or are in a second state, wherein the or each slave station in the first state, if retransmission is not
10 required, transmits a positive acknowledgement in a predetermined time slot which is substantially non-overlapping with any positive acknowledgement transmitted by any other slave station in the first state, wherein the or each slave station in the second state does not transmit an acknowledgement if retransmission is not required and transmits a negative acknowledgement if
15 retransmission is required, wherein at least one negative acknowledgement transmitted by at least one slave station in the second state is transmitted at least partially concurrently with the or at least one said predetermined time slot, and wherein the master station retransmits the data if it does not receive the positive acknowledgement from the or each of the slave stations in the first state or if it receives at least one negative acknowledgement, and if the validity
20 of the data has not expired.

2. A system as claimed in claim 1, wherein the time of transmission of the positive acknowledgement by the or each slave station in the first state
25 is assigned by the master station.

3. A system as claimed in claim 1 or 2, wherein at least one of the plurality of slave stations is commanded into one of the first and second states by the master station.
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4. A system as claimed in claim 3, wherein the master station has means for assessing the quality of radio communication with each of the

plurality of slave stations, and the or each of the slave stations in the first state has or have respectively lower quality radio communication with the master station than the or each of the slave stations in the second state.

5 5. A system as claimed in claim 3 or 4, wherein at least one of the plurality of slave stations comprises means to adjust its transmitted power level under command of the master station.

10 6. A master radio station for use in a multicast radio network comprising a master station and a plurality of slave stations, the master station comprising means to command at least one of the slave stations of the plurality to adopt a first state wherein the slave station transmits a positive acknowledgement in response to receiving data that it does not need to have retransmitted, means to command at least one other of the slave stations of the plurality to adopt a second state wherein the slave station does not transmit an acknowledgement in response to receiving data that it does not need to have retransmitted and transmits a negative acknowledgement in response to receiving data which it needs to have retransmitted, means to instruct the or each slave station in the first state of a time slot in which to transmit the positive acknowledgement such that positive acknowledgements transmitted by more than one slave station are transmitted at substantially non-overlapping times, means to transmit data to the plurality of slave stations simultaneously, means to receive acknowledgements from the plurality of slave stations, and means to retransmit the data if the positive acknowledgement is not received from each of the slave stations in the first state or if at least one negative acknowledgement is received, and if the validity of the data has not expired.

30 7. A master radio station as claimed in claim 6, further comprising means to assess the quality of radio communication with each of the plurality of slave stations and means to select the states of each of the plurality of slave stations such that the quality of communication with the or each slave station

in the first state or lower than the quality of communication with the or each slave station in the second state.

8. A master radio station as claimed in claim 6 or 7, further
5 comprising means to command a slave station to alter its transmitted power level.

9. A slave radio station for use in a multicast radio network
comprising a master station and a plurality of slave stations, the slave station
10 comprising means for setting the slave station into a first state and into a second state, means for receiving data from the master station, means for determining whether the slave station requires retransmission of the data, wherein in the first state, if it does not require retransmission of the data, the slave station transmits a positive acknowledgement in a predetermined time slot which is substantially non-overlapping with any positive acknowledgement
15 transmitted by any other slave station in the first state, and wherein in the second state the slave station does not transmit a positive acknowledgement and transmits a negative acknowledgement if it requires retransmission of the data, the negative acknowledgement being transmitted at least partially
20 concurrently with at least one time slot predetermined for the transmission of a positive acknowledgement.

10. A slave radio station as claimed in claim 9, comprising means
responsive to a command from the master station to set the slave station into
25 one of the first and second states.

11. A slave radio station as claimed in claim 9 or 10, wherein the
time slot for transmission of a positive acknowledgement is assigned by the
master station.

12. A slave station as claimed in claim 9, 10 or 11, comprising means responsive to a command from the master station to adjust its transmitted power level.

5 13. An integrated circuit comprising the radio station as claimed in any one of claims 6 to 12.

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